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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RAO, SHEELA S

ART UNIT

PAPER NUMBER

2128

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/537,521	<b>Applicant(s)</b> PLOCOENNIK ET AL.	
	<b>Examiner</b> SHEELA RAO	<b>Art Unit</b> 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. This Office action is in response to papers filed on 11 February 2008.
2. Claims 1-9 are pending and presented for examination. Claims 1-5 have been amended and claims 6-9 are newly added.

***Drawings***

3. The drawings were received on 11 February 2008. These drawings are acceptable.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not describe the limitations of the claimed invention. A detailed description is given on page 4 of the disclosure; however, the context of the detailed description is only directed to naming the elements of the single figure. The operation, calculations, connectivity, structural support, and control of the method of

adjusting microstructural properties of a metal produced in an installation for shaping, cooling, and/or heat treatment of metal using and/or according to the proposed embodiments as stated in the Summary of the Invention portion of the instant disclosure have not been identified in the detailed description as they have been claimed. Hence, the limitations of the instant invention as claimed do not enable one of skill to make and/or use the invention without undue experimentation.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1: the claim as written reads has containing a preamble within a claimed limitation. Although the Applicant is allowed to be his/her own lexicographer, the phraseology of the instant claims are not clearly understandable to identify the aspects of the claimed subject matter;

Line 9 – “online” is mentioned. It is not clear what Applicant considers online. As the term is generally used in the art it pertains to being connected or served by a computer. With regard to the instant claims, a computer is not cited as being used to carry out the functionality of the instant invention;

Line 14 – “corresponding method” does not have proper antecedence as a first method has not been claimed thus the phrase does not include proper functional antecedence;

Line 17 – “an effect”. What Applicant considers to be “an effect” that is exerted on the actuators has not been clearly identified or suggested by the claim language nor it is found in the specification.

Line 20 – “nondestructively detected”. Support for the desired result has not been identified or stated. What Applicant considers as “nondestructive” as opposed to destructive is not identified. Whether the methodology of the instant invention causes this result and hence needs to detect such is not known. Indefinite language leaves the content and/or intent of the instant claim to be vague.

Claim 4: line 3 – “carrying out online microstructural control” is stated as being included in the method of the independent claim. This “online control” has not been specifically defined so as to provide support for the functionality of “carrying out ... [the] control”;

Line 9 – “a course”. What Applicant considers to be “a course” is not known. The term course, in and of itself, has many definitions. In respect of the claimed limitation, “a course of the microstructural transformation” is vague and indefinite.

Claim 5: line 2 – “a set value”. What is considered a “set” value in regards to the claimed invention is not known. An actual value is generally interpreted as one

that is measured in process but a "set value" is commonly known as a defined value. Within the limitations of the instant application, a predetermined value or set value has not been established, leaving the "set value" undefined;

Line 5 – “online adaptation”. Applicant’s use of “online” is undefined and thus vague. What is to be interpreted as an “online adaptation” has not been particularly identified;

Line 6 – “function”. The claim states that the online adaptation of a model is to be carried out as a “function” of the detected value, but what "function" pertains to is not clear. Whether the "function" in the instant invention is to be a mathematical expression or value, an action, or a characteristic expression or value is not particularly defined;

Line 6 – “the detected value”. Claim 5 depends from claim 1 and in claim 1 the detecting of an actual value is claimed. However, in claim 5 an “actual value” is claimed. It is not clear whether "the detected value" and the “actual value” or one and the same or two different values.

Claims 2, 3, and 6-9 are also rejected as they depend from the rejected base independent claim 1.

8. Claim 3 recites the limitation "the site" in 3. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,357,443 to Watanbe et al.

The patented invention by Watanbe et al. (hereinafter "Watanbe") teaches of a method of estimating the properties of a steel product for determining metallurgical phenomena based on production and material information. As best can be understood, the prior art anticipates the limitations of the instant invention.

Claim 1 cites a method for adjusting microstructural properties of a metal produced in the process control or process regulation of an installation for shaping, cooling, and/or heat treatment of the metal, wherein the installation is equipped with actuators for setting specific operating parameters, and the corresponding method process is based on a method model, with which suitable process control and/or process regulation variables for acting on the actuators are determined online with computer assistance after relevant measured values have been detected, comprising the steps of: detecting at least one current actual microstructural characteristic value that provides information about the metal microstructure online at an end of or during a corresponding method process as a relevant measured value; and depending on the

relevant value and using a microstructure model and the method model on which the process is based, exerting an effect on the actuators of the method process in order to adjust desired microstructural properties of the metal, such that the following can be nondestructively detected as the actual microstructural characteristic value:

- a microstructural grain size value, and/or
- a microstructural transformation time or the microstructural transformation time interval,
- the microstructural transformation.

Watanbe teaches this beginning in column 3 in relation to Fig. 1, the treatment or processing of steel or the metal is taught at line 11 as being either heat treatment, rolling, and/or cooling. The method models used to estimate the properties is listed beginning at line 47. The step of detecting an actual microstructural characteristic value is taught as being computed by estimating the state of the metallic structure as per col. 4: ll. 1-4. The various characteristics of the structure are defined in line 11 of column 4. The last step of exerting an effect on the actuators is taught in column 5 lines 7-16. The process of computing the results of a model from a previous step or structure is carried through. Although the presence of actuators is not specifically stated, the conversion of data for adjusting properties to detect actual characteristics is established by a computation process using computer software; thereby, completing the functionality of actuators as per the instant invention. Essentially, the software of the computation process simulates the action of the actuators to adjust metal properties in a more automated and consistent method. The computation process undertaken by the

software of the prior art is the modeling equivalent to utilizing a physical actuator on a physical item. Since an actuator is something that causes a physical change, i.e. exerting an effect to adjust properties, using a data conversion model as in Watanbe automates the "physical change" with the use of math and physics by computational methods. It is a well known improvement in the art to automate processes using computer programs so as to provide ease and speed of operations, assessment, and processing. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used calculation or a data conversion process such as in computer programs in lieu of actuators to use computational methods to calculate and adjust properties of the metal so as to detect characteristic values in a faster, consistent, and more accurate manner based on given conditions.

Claim 2 specifies the microstructural grain size as the microstructural grain size value for the steel group of C-Mn steel. Watanbe teaches such in col. 4: ll. 24-25, and col. 5: ll. 22-36.

Claim 3 includes detecting the site or the time interval of the beginning and end of the microstructural transformation with several detection units. Watanbe teaches the step of detecting with several detection units by showing the construction and computation of the model in a variety of units. Examples of the model being processed through different units in each of the 1 steps is taught beginning at line 64 of column 3.

Claim 4 is directed to the process of carrying out the online microstructural control in a cooling line of a wire mill with a water-cooled segment of the cooling line and an air-cooled segment of the cooling line, detecting wherein a current

microstructural grain size value of the metal after passage through the water-cooled segment of the cooling line by means of an ultrasonic measuring instrument, and detecting wherein the temperature of a microstructural transformation and a course of the microstructural transformation, with respect to time with temperature measuring devices that can be moved in the direction of conveyance of the metal and/or variably oriented. Watanbe teaches this aspect of the instant invention beginning at line 25 in column 10.

Claim 5 states including comparing an actual value and a set value, and wherein if the comparison of the actual value and the set value reveals a difference that exceeds a certain value, carrying out an online adaptation of the method model and/or the microstructure model as a function of the detected value that provides information about the microstructure. This aspect of the claimed invention is taught at lines 37-43 in column 8.

Claim 9 includes the detecting of the microstructural transformation temperature with at least one temperature detection unit, which is movable longitudinally with respect to the direction of metal conveyance and is positioned as a function of the site of the microstructural transformation that is expected based on the microstructure model. Watanbe teaches this at column 6, lines 34-68.

11. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,357,443 to Watanbe et al. as applied to claim 1 above, and further in view of in view of US Patent No. 5,804,727 to Lu et al.

As with claims 6-8, the use of specific type of measuring instruments is claimed. Claim 6 specifies the detecting step to be done with an ultrasonic or x-ray measuring device. Claim 7 defines the detecting step to be done by detecting linear expansion of the metallic lattice that is associated with the transformation using the measuring instruments that contact the metal. And claim 8 further defines the measuring instruments as being rolling force measuring devices or measuring rollers. Although Watanbe teaches the use of rollers for the rolling process and measuring devices for measuring metallic properties, the prior art fails to specifically teach the use of the devices as per claims 6-8. For this reason, the prior art of Lu et al. (hereinafter "Lu") is relied upon. Lu teaches of a method for determining and evaluating physical characteristics of a material, especially from manufacturing processes as rolling, etc. In operation, an ultrasonic wave is created for use and measured to determine the physical characteristics of the texture, grain size, and crystal lattice structure, as stated in the abstract and in col. 4: ll. 16 et seq.. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the measuring devices as used by Lu in the method of Watanbe so as to provide a more accurate high resolution method for determination and evaluation of physical characteristics without the use of destructive methods.

For the reasons stated above, the prior arts of record teach or fairly suggest the limitations of the instant invention, thereby rendering the claims unpatentable.

**Conclusion**

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are from the same field of endeavor.

US Patent No. US 6,866,729 B2	Gramckow et al.
US Patent No. 5,702,543	Palumbo
US Patent No. US 6,546,310 B1	Doll et al.
US Patent No. US 6,430,461 B1	Andorfer et al.
US Patent No. 5,891,275	Elfmark et al.
US Patent No. US 7,031,797 B2	Reinschke et al.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela Rao whose telephone number is (571) 272-3751. The examiner can normally be reached Monday - Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on (571) 272-2279. The fax number for the organization where this application or any proceeding papers is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. It should be noted that status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see [http:// pair-](http://pair-)

**direct.uspto.gov**. Should any questions arise regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/SHEELA RAO/  
Examiner, Art Unit 2128  
May 5, 2008

/Kamini S Shah/  
Supervisory Patent Examiner, Art Unit 2128